

ABSTRACT

A radio system employing Orthogonal Frequency Division Multiplexed (OFDM) includes a Base Transceiver Station (BTS) along with a number of mobile terminals located within a coverage area of the BTS. In this system, a target mobile terminal requires a focused transmission beam to receive high data rate traffic information while the remainder of the mobile terminals must receive pilot and signalling information. To achieve both objectives, a BTS is implemented with a transmission apparatus that generates a directional transmission beam for the data traffic information. In one design, this directional beam transmits the pilot and signalling information along with the data traffic information by rotating the beam within the coverage area. In another design, the BTS has a transmission apparatus that generates more than one transmission beam. In one case, the BTS transmits a directional transmission beam for the data traffic information required by the target mobile terminal and a second broad transmission beam for the pilot and signalling information required by the all of the mobile terminals. In another case, the BTS transmits two directional transmissions beams, one beam for data traffic information and one rotating beam for pilot and signalling information.